REJUVENATION??? New Life for the Bally ARCADE? On Friday, Jan.4, Fidelity Electronics,
Ltd., signed a letter of intent covering the purchase of the Consumer Products Div.
of Bally. (Fidelity now builds the line of ___ Challenger electronic board games,
including the latest talking Chess Challenger). The above was announced to the Bally
dealers/distributors at the Winter Consumer Electronics Show on Saturday, and so
Tom Wood and I hot-footed it over to the Fidelity stand. We had a very interesting
discussion with their Engineering Manager, and talked about our goals, their inten-
tions, etc. At the moment, it seems like Fidelity will pump up the ARCADE production
line and get 10 or more cartridges under way for distribution this year. They plan
on reviewing the Add-On option later this year, and since there is now a chance that
this device may get into production after all, I have revised my plans and placed the
additional memory unit onto a low priority slot. However, work on a somewhat less
comprehensive device is underway, one that I call PROJECT ONE.

PROJECT ONE is planned to be a printed circuit board that will be able to have two
modes of operation. One, with an additional power supply, will contain some memory
and have a connector for a keyboard. 32K is planned. In the second mode, there will
be an additional connector that will interface to a S-100 system. In this way, the
Bally and the S-100 devices that can be connected will be able to communicate.
Effort is now underway to translate a prototype board into printed circuit format,
and we expect to have the units (bare but with sockets and small parts soldered in
place) completed by mid-summer. Cost is programmed not to exceed $75.

POPULARITY CONTEST is underway to determine which of the following are feasible to
pursue. Please prioritize this list against your own goals. I'll tabulate your
responses to me on Feb. 6, and we shall evaluate them.
     Plug in cartridges of languages other than Tiny BASIC
     Data processing - inventories, indexes, keeping track
     Word processing
     Modem access to telephone circuits, originate/receive
     Self diagnostic cartridge
     Computer control of external devices - broad spectrum
     Remote readouts, without using the TV screen
     Continuous real time clock, readable by computer
     Bally - Bally interconnection by cables
     Power control of tape drive including locating files, adding/removing data
     Light pen
     Digital plotter
     Prom Burner
     Vocal communication

MODEM is one item I'd be greatly interested in - so we can communicate via the tele-
phone lines, or use TYMESHARE, or use a bulletin-board type of nation-wide service.
One of these, SOURCE, was shown in operation at the CES by the TI computer display,
primarily by illustrating the message function. One of our subscribers is TCA922, in
case any of you already have this particular service. There is a write-up on SOURCE
in the Jan. Interface Age, and they will have a follow-up Z-80 tie-in article in
March. There is an article on the CBBS system in the January Microcomputing.

WEIRD PROGRAMS are still being generated. Try this one by Bob Wagner:
                10 LIST 15000
                20 GOTO 10
                              or
                                   10 LIST 14120,15300
                                   20 GOTO 10

BALLY AWARDS announced by VIDEO magazine in their March issue - They reviewed TV-type games and gave 10 awards, of which Bally received 3: "Best Audio and Video Effects"- BALLY; "Best Sports Game"-Football; and "Best Commercial Arcade Game"-Space Invaders.

PITTSBURGH area subscribers are invited to call JIM BAILEY at 833-8768 (Library area)

RAPID BOX MOVEMENT is desired by some game programmers who would like to simulate the movement of a ball,etc., They wonder how to control a box so that it moves rapidly across the screen.

CHIP FAILURE can occur if a large static electricity charge is built up. If you do experimentation, you might consider some kind of isolation device or scheme. Ron Schwenk suggests all experimentation thru the hand controller ports be done with No.4 - failure of that one segment of the chip still allows use of 1 & 2 in games and #3 for the interface.

ENLARGED LETTERS have cropped up again. This time they are done graphically, as opposed to previous POKE'd versions. co-Author Phil Morton will be vanning to Alaska this summer and would like to contact Northerners. He is at 1839 S. Halsted St. Chicago, IL 60608, (312) 666-5628. In the program, I used BIG LETTERS for the items to be printed where Phil used ARCADIAN HOT SHOT. Lines 129-240 clean up the screen and add the buckshot. Phil has an AXIOM EX-850 video printer which can 'photograph' the screen and provide a reproducible image.

b means x (multiply)

c means ÷ (divide)

```
1 . ELECTRONIC
2 . VISUALIZATION
3 .    CENTER
4 .
5 .BY DAN SANDIN
6 .& PHIL MORTON
15 .2 TEXT LINES SCALED
19 INPUT L
20 CLEAR ;BC=0;FC=7
30 PRINT "  BIG
40 PRINT "LETTERS
50 Q=29
60 IF L>4Q=37
70 V=37
80 IF L>4V=40
90 FOR X=-80TO 160cL-80
95 FOR Y=QTO 43
```

```
BIGGER VIA 'L' VARIABLE...
100 IF PX(X,Y)BOX (X+81)bL-79,(Y-V)bL,L,L,1
110 NEXT Y
120 NEXT X
129 .TEXT LINE ERASE LOOP
130 FOR A=QTO 44
140 BOX 0,A,160,1,2
150 NEXT A
200 .INDEFINATE RND (2)    PIXELATING FIELD
230 BOX RND (160)-80,RND (88)-44,RND (2),RND (2),3
240 GOTO 230
```

This version of SLOT MACHINE has an interesting set of graphics as the 'reels' rotate. I kept losing money, maybe you'll have better luck.

```
8 . SLOT MACHINE
9 .MUELLER 8-4-79
10 CLEAR
20 BC=-24
30 FC=127
35 NT=0
40 PRINT " ELECTRONIC SLOT PAYOFF"
50 PRINT "  $$$  200    *** 25"
60 PRINT "  &&&  100    @@@ 5"
65 PRINT "  %%%  50"
70 CY=-5
80 PRINT " LEMON  LEMON  LEMON"
85 BOX -6,-5,143,22,3
90 BOX -6,-5,139,18,3
90 FOR X=-5410 42STEP 48
100 BOX X,-5,41,16,3
110 NEXT X
120 E=1000
130 E=1000
140 CX=-67;CY=-32
145 NT=0;FC=127;BC=-24
150 PRINT "PLAYER #1 FUNDS   $",#1,D
155 CX=-67
160 PRINT "PLAYER #2 FUNDS   $",#1,E,PRINT
170 IF TR(1) GOTO 200
180 IF TR(2) GOTO 220
190 GOTO 170
195 NT=0
200 F=1
205 FOR Z=16TO 22;&(Z)=79;NEXT Z
210 GOTO 205
220 F=2;GOTO 205
221 CX=-65;CY=-5;GOSUB 1060
222 CX=-17;CY=-5;GOSUB 1060
223 CX=31;CY=-5;GOSUB 1060
224 NT=4
230 FOR G=1TO 8
240 BOX -6,-5,139,18,3
250 NEXT G
260 IF TR(F)=0GOTO 280
270 GOTO 230
280 IF F=1D=D-1
290 IF F=2E=E-1

300 A=RND (10)
310 B=RND (10)
320 C=RND (10)
330 CX=-65
340 CY=-5
350 IF A=1GOSUB 1010
360 IF A=2GOSUB 1020
370 IF A=3GOSUB 1030
380 IF A=4GOSUB 1030
390 IF A=5GOSUB 1040
400 IF A=6GOSUB 1040
410 IF A=7GOSUB 1040
420 IF A=7GOSUB 1050
430 CX=-17;CY=-5
440 A=Z
450 IF B=1GOSUB 1010
460 IF B=2GOSUB 1020
470 IF B=3GOSUB 1030
480 IF B=4GOSUB 1030
490 IF B=5GOSUB 1040
500 IF B=6GOSUB 1040
510 IF B>5GOSUB 1050
520 CX=31;CY=-5
530 B=Z
540 IF C=1GOSUB 1010
550 IF C=2GOSUB 1020
560 IF C=3GOSUB 1030
570 IF C=4GOSUB 1030
580 IF C=5GOSUB 1040
590 IF C>5GOSUB 1050
600 C=Z
610 IF A=BIF B=CGOTO 625
620 GOTO 140
625 BC=-7;FC=81
630 CX=-67;CY=-32;PRINT "↑ ↑ ↑ ↑ WINNER ↑ ↑ ↑"
635 CX=-67;PRINT " PLAYER",#2,F,;PRINT "  ,"
636 FOR U=1TO (B-C)
637 &(19)=37;&(17)=31;&(21)=47;&(22)=31

638 FC=83
639 FOR U=38TO 20STEP -1;&(16)=U;NEXT U
640 FC=172
641 FOR U=38TO 30;&(16)=U;NEXT U
642 NEXT U
644 FOR Z=22TO 16STEP -1;&(Z)=0;NEXT Z
649 IF C=1P=200
650 IF C=2P=100
660 IF C=3P=50
670 IF C=4P=25
680 IF C=5P=5
700 IF F=1D=D+P
710 IF F=2E=E+P
720 GOTO 140

1010 PRINT " $$$";Z=1;RETURN
1020 PRINT " &&&";Z=2;RETURN
1030 PRINT " %%%";Z=3;RETURN
1040 PRINT " ***";Z=4;RETURN
1050 PRINT " @@@";Z=5;RETURN
1060 PRINT " ###";RETURN
```

```
 1 . MONTHLY LOAN PAYMENT
 2 . BY G.HALLQUIST
 4 :RETURN
 5 CLEAR ;NT=1
10 FOR K=0TO 125;@(K)=0;MU=31+K;NEXT K
20 FOR K=13TO 8STEP -1
30 INPUT "LOAN AMOUNT DIGIT?"L
40 @(K)=L;NEXT K
50 INPUT "MONTHS?"M
60 FOR K=4STO 41STEP -1
70 INPUT "INTEREST RATE DIGIT?"I
80 @(K)=I;NEXT K
90 @(65)=1;@(64)=2;@(80)=1;@(26)=1
100 $c@(36),@(54),@(36)
110 $+@(36),@(18),@(36)
120 FOR K=1TO M;MU=30+K
130 $b@(36),@(72),@(72);NEXT K
140 $c@(18),@(72),@(72)
150 $-@(18),@(72),@(72)
160 $c@(18),@(18),@(36)
170 $c@(72),@(36),@(72)
180 $c@(0),@(72),@(90)
190 @(113)=5;$+@(90),@(108),@(90)
200 FOR K=90TO 95;@(K)=0;NEXT K
210 CLEAR ;PRINT "LOAN AMOUNT= ",
215 $b@(0),@(18),@(0)
220 A=13;B=8;GOSUB 400
230 $b@(36),@(54),@(36)
240 PRINT ;PRINT "INTEREST RATE= ",
250 IF @(45)="0" GOTO 270
260 TV=@(45)
270 TV=@(44);TV=46;TV=@(43);TV=@(42);TV=@(41);TV=37;PRINT
280 PRINT "NO. OF MONTHS= ",#1,M; PRINT
290 PRINT "MONTHLY PAYMENT= ",
300 A=103;B=98;GOSUB 400
310 TV=46;TV=@(97);TV=@(96);PRINT
320 K=Mc100;@(28)=K;M=M-Kb100
330 K=Mc10;@(27)=K;M=M-Kb10;@(26)=M
340 $b@(18),@(90),@(18)
350 PRINT "TOTAL PAYMENTS= ",
360 A=32;B=26;GOSUB 400
370 TV=46;TV=@(25);TV=@(24)
380 PRINT ;STOP
390 .
400 Z=1;FOR K=ATO BSTEP -1
410 IF @(K)="0" IF Z GOTO 430
420 Z=0;TV=@(K)
430 NEXT K
440 RETURN
```

----- will calculate the monthly payment and the total payment when you input the loan amount, the interest rate, and the months the loan will run. Enter these values by the digit, including leading zeros (that is, $20,000 is entered as 020000, and 9% is entered as 09000).

This could be a good start for an amortization program, where each monthly payment is split into its principal and interest portions.

SERVICE MANUAL by Bally (PA-) is on back order again. They like to dole them out by the dozen, so I always have a waiting list...

```
   1 .
   2 .ZAPPIT
   3 .BY R.SWEARINGEN
   4 :RETURN
   5 CLEAR ;NT=0;C=0;GOTO 480
  10 CLEAR ;BC=0;FC=180;NT=0;D=255;PRINT "SCORE ";PRINT #1,C,;X=RND (100)-50;Y=R
ND (50)-25
  20 GOSUB 370
  30 LINE -44,-44,4;LINE 43,43,1;LINE -44,43,4;LINE 43,-44,1
  40 BOX 0,0,160,1,1;BOX 0,0,1,88,1
  50 LINE 0,28,4;LINE 10,26,1;LINE 20,20,1;LINE 26,10,1;LINE 28,0,1
  60 LINE 26,-10,1;LINE 20,-20,1;LINE 10,-26,1;LINE 0,-28,1
  70 LINE -10,-26,1;LINE -20,-20,1;LINE -26,-10,1;LINE -28,0,1
  80 LINE -26,10,1;LINE -20,20,1;LINE -10,26,1;LINE 0,28,1
  90 LINE 0,0,4;Z=1
 100 GOSUB 330
 110 &(21)=2b45;BOX X,Y,32,6,Z;BOX X,Y,38,2,Z
 120 BOX X,Y+3,24,1,Z;BOX X,Y+4,16,1,Z;BOX X,Y+5,8,1,Z
 130 BOX X+21,Y-1,5,4,Z;BOX X-22,Y-1,5,4,Z;BOX X+25,Y-2,3,3,Z;BOX X-26,Y-2,3,3,Z
 140 LINE X+19,Y+1,4;LINE X+30,Y-4,Z;LINE X+24,Y-4,Z;LINE X-26,Y-4,4;LINE X-32,Y
-4,Z;LINE X-21,Y+1,Z
 150 BOX X-4,Y-4,26,1,Z;BOX X+8,Y-4,7,2,Z;BOX X-8,Y-4,7,2,Z;IF Z=2GOTO 180
 160 LINE X-8,Y+1,4;LINE X-6,Y-1,2;LINE X-6,Y-2,2;LINE X-8,Y-4,2;LINE X-10,Y-2,2
;LINE X-10,Y-1,2;LINE X-8,Y+1,2;LINE X+8,Y+1,4
 170 LINE X+6,Y-1,2;LINE X+6,Y-2,2;LINE X+8,Y-4,2;LINE X+10,Y-2,2;LINE X+10,Y-1,
2;LINE X+8,Y+1,2
 180 LINE 0,0,4;IF Z*2IF TR(1)=1GOTO 210
 190 IF Z=2GOTO 20
 200 IF Z=1 Z=2;&(21)=85;GOTO 110
 210 FC=98;NT=5;&(21)=0
 220 LINE 0,0,4;LINE -24,-44,-1;LINE 24,-44,-4;LINE 0,0,1
 230 FOR Q=0TO 3;MU="$";MU="7";NEXT Q
 240 IF 10>XIF -10<XGOTO 260
 250 GOTO 10
 260 IF 10>YIF -10<YGOTO 280
 270 GOTO 10
 280 C=C+1;Q=RND (15);R=RND (15);FOR A=1TO 8;Q=QbAc2;R=RbAc2
 290 &(19)=150;BC=0;&(23)=255;D=D-3;BC=92;&(21)=D
 300 BOX Q,R,RND (5),RND (5),1;BOX Q,-R,RND (5),RND (5),1
 310 BC=7;BOX -Q,R,RND (5),RND (5),1;BC=92;BOX -Q,R,RND (5),RND (5),1
 320 NEXT A;&(19)=0;&(21)=0;&(23)=0;GOTO 10
 330 IF 10>XIF -10<XGOTO 350
 340 CY=-35;CX=-20;PRINT "TRACKING";RETURN
 350 IF 10>YIF -10<Y CY=-35;CX=-20;PRINT " LOCKED ";RETURN
 360 GOTO 340
 370 IF JY(1)=0IF JX(1)=0GOTO 420
 380 IF JX(1)=1 X=X-25
 390 IF JX(1)=-1 X=X+25
 400 IF JY(1)=1 Y=Y-25
 410 IF JY(1)=-1 Y=Y+25
 420 X=X+RND (20-10;Y=Y+RND (20)-10
 430 IF 10>X IF -10<XGOTO 450
 440 RETURN
 450 IF 10>YIF -10<YGOTO 470
 460 RETURN
 470 X=0;Y=0;RETURN
 480 PRINT "DO YOU WANT INSTRUCTIONS ? (1=YES 0=NO)
 490 IF &(23)=8GOTO 520
 500 IF &(22)=16GOTO 520
 510 GOTO 490
 520 PRINT "THIS GAME DOES NOT KEEP
     TIME. THE JOYSTICK STEERS THE TARGET,
     THE TRIGGER   FIRES THE LASER.
 530 PRINT  NO HIT IS SCORED UNLESS
     THE SCREEN READS 'LOCKED '
 540 FOR A=0TO 1500;NEXT A;GOTO 10
 550 GOTO 10
```

B A G E L S

BAGELS is a game in which a player, using logical deduction, predicts a given number.

In this version, the number is a random 3 digits with no duplicating digits, and after each guess the program displays one of the following responses:

BAGELS	-- No digit is correct
PICO	-- One correct digit is in the wrong place
PICO-PICO	-- Two or more correct digits are in the wrong places
FERMI	-- One correct digit is in the correct place
FERMI-PICO	-- One correct digit is in the correct place and one or more correct digit is in the wrong place
FERMI-FERMI	-- Two or more correct digits are in the correct places

Since the correctness of only two out of three digits is disclosed, after the FERMI-FERMI response the program prompts for the confirmation of the last entry as the player's choice by printing
        GAME GUESS?
Press GO when the player believes that it is the true number. Press any other key to continue entering more guesses.

The program then displays whether the player's choice was right or wrong. When at least one game is won, game statistics will print after each game.

Press GO to start the next game.

A running average is computed as the total number of guesses divided by the number of games won.

Enter 000 to give up guessing the number and to proceed to the next game with a new number. The discontinued game is not considered as a lost game, but the number of guesses (not including the 000 entry) for the current game contributes to the game average.

Use the ERASE key for re-entering the first two digits. When the third digit is entered, the program immediately displays one of the responses.

Good luck and have fun with BAGELS.

```
1 .BAGELS
3 .C MORIMOTO 1979
4
10 :RETURN
50 CLEAR :NT=0;FC=66;BC=7
60 Z=300
70 Q=0;W=0;U=0;F=0
100 BOX 5,-5,80,50,11BOX 5,-5,78,48,3
110 A=40;CY=20;PRINT "BAGELS"
120 BOX -26,20,49,11,3
130 NT=5;FOR A=1TO 15
140 CX=RND (3)b20-40;CY-RND (5)b8-30
150 FOR B=1TO 3;TU=47+RND (10);NEXT B;NEXT
160 NT=0;FC=252
170 CX=25;CY=-39;PRINT "PRESS GO"
180 A=RND (10)
190 IF &(23)=0GOTO 180
200 @(4)=RND (10)-1;@(7)=@(4)
210 @(5)=RND (10)-1
220 IF @(4)=@(5)GOTO 210
230 @(8)=@(5)
240 @(6)=RND (10)-1
250 IF @(6)=@(4))+@(6)=@(5)GOTO 240
260 CLEAR ;G=0;Q=0+1;FC=7;BC=243
270 CY=40;PRINT " GAME ",#3,0
280 IF U CX=0;CY=40;PRINT "AVERAGE",#3,U,"...",#1,F
300 NT=0;CX=-77;PRINT " "
310 NT=1;CX=-77;PRINT #2,G+1,">",
320 FOR A=1TO 3
330 X=KP;IF X=31GOTO Z
340 TU=X
350 IF (X*4B)-(X*57)GOTO 900
360 @(A)=X-48;NEXT A
370 IF @(1)=@(2)+@(3)=0GOTO 750
380 IF @(1)=@(2))+@(1)=@(3))+(@(2)=@(3))GOTO 900
500 G=G+1;P=0
510 FOR A=1TO 3
520 IF @(A)=@(A+3)P=P+4
530 IF @(A)=@(A+4)P=P+1
540 IF @(A)=@(A+5)P=P+1
550 NEXT A

610 IF P=0PRINT " BAGELS";GOTO Z
620 IF P=1PRINT " PICO";GOTO Z
630 IF P<=3PRINT " PICO-PICO";GOTO Z
640 IF P=4PRINT " FERMI";GOTO Z
650 IF P<7PRINT " FERMI-PICO';GOTO Z
660 PRINT " FERMI-FERMI";
670 PRINT "GAME GUESS? ",;A=KP
680 IF (A=13)-(A=49)GOTO 700
690 PRINT "NO",;NT=30;MU=20;MU=18;GOTO Z
700 CX=CX-12;PRINT " ;PRINT ;IF P*12GOTO 740
710 PRINT "YOU GOT IT";W=W+1;BC=155
720 NT=0;A=48;MU=99;MU=53;MU=A;MU=A;MU=A;MU=A
730 MU=50;MU=49;MU=58;MU=51;MU=A;MU=51;MU=A;GOTO 790
740 PRINT "SORRY, WRONG NUMBER";D=D+1;MU=51;MU=A;BC=66;GOTO 760
750 PRINT ;PRINT ;PRINT "GAVE UP";MU=123
760 PRINT "CORRECT NUMBER WAS ",#1,@(4),@(5),@(6)
770 NT=10;MU=45;MU=51;MU=A;MU=45;MU=51
780 MU=99;MU=49;MU=58;MU=51;MU=99;MU=54;MU=48;MU=48
790 NT=0
800 C=C+6;IF W=0GOTO 860
810 U=CcW;F=(RMb10)cW
820 PRINT "STAT. AFTER GAME *",#2,0
830 PRINT " # GAMES WON ....",#2,W
840 PRINT " # GAMES LOST ...",#2,D
850 PRINT " AVE # GUESSES ..",#2,U,"...",#1,F
860 GOTO 100
900 PRINT " INPUT ERROR",;GOTO 920
910 PRINT " DUPLICATE DIGITS",
920 NT=5;FOR A=1TO 10;MU=87;MU=84;NEXT A
930 GOTO Z
```

TWENTY SIX

ARCADIAN™

Robert Fabris, ex-gambler
3626 Morrie Drive
San José, CA 95127

FIRST CLASS

Achievable   . .

F$_{ID}$.? → speed up Z80? — retro kit

KB off KPad
Modem ano $\frac{8}{-150.}$/100
S-100. POP. 350.
Syst MON. ROM

adaptr 4 rkts → 2716 8K
ie can hold

PROM BRRNOR — 2708
2716, 32

Mr Bob Fabris
3626 Morie Dr
San Jose, Ca. 95101

Dear Bob -
Enjoyed our telecon last Tues. - hope you
can come up with an add-on that includes
a full BASIC (ala Z-Grass). An add-on without
this kind of language capability doesn't seem
very desireable or viable to me, and I
suspect would severely cut down your pros-
pective sales forecast. Hardware "sans" software
for this type of product would only be bought
by engineering types, + not (in my opinion)
have the kind of market appeal you'd need.
Anyhow, that's my 2¢ worth!

Here are a couple of "quick and dirty" mods to
the Kilobaud Battlestar Galactica game:
1) to avoid leaving "tracks" from the saucer when
   the saucer is moved downward, change
   the BOX parameters in statement 140:
      140 LINE -10,-10,0; BOX H,V,32,8,2
2) To remove line printing your current rank at start of
   each saucer, eliminate the GOSUB in line 130:
      130 C Y=-40
3) To correct a bug that causes the program to
   stop when you have hit hardly anything:
      555 IF R<=0 R=1

Here's a "quick & dirty" mod to MICROTREK (see page 89) that allows the Enterprise to obtain an energy "refill", but obliterates the Base that you land on when you get this energy. In line 350, immediately after "...8+Z." and before "IF @ (X) #1...", insert "IF @ (X) = 4 L = 10000; Q = 1; GOTO 360". If necessary, rekey the remainder of the original line 350 as line 355. I was unable to get energy restored or "Docked" by moving adjacent to a starbase, contrary to the documentation. If it was due to an error on my part, a thorough comparison of my program to the one in the Arcadians didn't show up the error, & I'd like to know where to look.

By the way, I had received a mailer from F. Cornett, asking for $ to join his group. I bit, sent a check; he has cashed it, but as of this date I've heard nothing from him. Do you know if he's for real, & when his promises will materialize?

Keep those Arcadians coming!

Phil Shafer

(214) 689-3917 — WORK #
596-3616 — HOME #

BREY'S RADIO & TV SERVICE
MELVIN S. BREYFOGLE
18 NORTH 7th STREET - ESTHERVILLE, IOWA 51334
PHONE (712) 362-4704

12/28/79

Robert Fabris

3626 Morrie Dr.

San Jose, CA. 95127

Dear Sir:

Will you please enter this in your adds in the Arcadian?

I have a Bally with four hand controls and carts #2001 & #3002

for sale. Price I have to have is $235.00 . This is a new unit

still in original box.

I still am keeping my Bally and still enjoy the Arcadian.

Thank You.

Sincerly

M.S. Breyfogle

check'd

sold

(Freeman)

Hi Bob —

Sounds like you have most of the data I've been Able to dig up. The cut off portions were just pin outs to from the device to our testers & would not be of any help. I haven't been Able to get ahold of any logic Diagrams yet.

As For as I know we haven't built any more parts For quite awhile. If I hear that we are cranking them up again I'll let you know.

Problems I've heard of are 1) picking up one of the controll handles when you've got a large static charge — blew up a couple ~~to te~~ I/o chips. Also the data chip is heat sensitive & runs fairly hot. If anybody takes the metal cover off the Mother board be sure to put more goop on the Data chip to ~~that~~ help pull the heat to the heat sink.

I heard that ~~t~~ ~~Colony~~ Ballys biggest problem when they were first producing was Assembly. The were being Assembled by the Midway Div. of Bally. The First batch produced was 50,000 & less ~~than~~ than half worked without going back & doing some repair.

JC

Dear Mr. Fabris;

It's only been a few months since I got my Bally and about a month since I received the back issues & current subscription to the Arcadian and I an OVERWHELMED.

In the latest issue you asked the subscribers what they wanted. I would like to see some practical applications for the Bally for household use. Also keep the game listings up there great!

I've programmed some math drills for my boy to help him in school. Time will tell if it helps at all.

Also I'm an electronics technician, working for a private telephone interconnect company. As soon as time permits, I'm going to add a switch in series with the RESET switch to prevent accidental program dumping. Also, a friend of my at work just got his interface unit and as soon as he gets over the newness, we're going to try to communicate the 2 Bally's via the telephone. I'll let you know how it works out.

A couple of suggestions for the latest checker game which adds a boarder to the mat & makes the checkers smaller. In line 2000 after CLEAR; add " BOX 38, -4, 80, 80, 1; BOX 38, -40, 78, 78, 3;" In 2040 change "BOX M, N, 8, J, 3 "to BOX M, N, 6, J, 3", in 2050 change "BOX M, N, 6, J-2, 3" to BOX M, N, 4, J-2, 3.

If there is any groups forming in the Chicago area please let me know. Keep up the great work!

Thanks!

Hank Chinppie
60090

Mr. Robert Fabris,

Enclosed is the original letter (with your return markings) that I used to add my name to the Arcadian subscription list. Also find enclosed the additional $5 you requested for receiving copies of all your back issues.

I have received my first two issues of the Arcadian and am quite impressed. In future issues you might refer to publications containing Bally articles and refer books dealing with either Bally Arcade or microcomputing in general, to novice users such as myself.

Looking forward to hearing from you,
Mike Shaughnessy

Has he gotten these yet?

216-
676-
4073

January 3, 1980
1536 Annette Ave
Library, PA 15129

Robert Fabris
Arcadian
3626 Morrie Dr.
San José, CA 95127

Dear Bob,

I have enclosed a check for $10 for a subscription to "Arcadian" for 1980. I've been following your newsletter for the past year at my local library! A year and a half ago I convinced them to buy a Bally Arcade, mainly because of their limited budget and the promise of imminent, inexpensive expansion capability. Will it ever come to pass?

The original ads called it the Library computer. If they had kept that name I could have told my computer widow wife I was on my way to play with the Library library Library computer! I have my own Bally Arcade now and am most interested in any add on unit, yours or Bally's.

Please place a notice in the next "Arcadian":
PITTSBURGH AREA subscribers are urged to contact Jim Bailey 833-8768 if they are interested in a local user group.

Yours in computing,
James R. Bailey

Robert Fabris,

First, I have not received my copy of Arcadian Vol. 2 No. 2 and a friend said he got his several days ago. AO

On the bottom of your info sheet on the expansion you said to let you know if interested. I am interested and have some further questions:

1) Will there be an enclosure?
2) Will there be address selection on the RAM?
3) Will there be provisions for pulling down the internal ROM (using lines on 50 pin connector)?
4) Will there be an assembler/editor?
5) Will there be a VDM for characters mixed over the graphics?

Some more info on the Bally:

1) The runtime stack for pending FOR/NEXT and GOSUB/RETURN combined is 19 deep.
2) Memory locations 2Ø05Ø-2Ø051 contain the address of @(1) it is updated automatically and is also used to calculate SZ, if insertion and deletion is being done in a user Basic text editor then it must be modified.
3) Memory locations 2ØØ7Ø-2ØØ77 contain data dealing with the character set and some

very strange things can be done by modi-
fying them.
4) Memory locations 20144-20161 seem to
be used only by the $ routine and can be
used to store a short machine language
subroutine.

An add for the Arcadian:

FOR SALE: PROGRAMS TAPE
CONTAINING SUPER STAR
TREK, SPACE BATTLE, CHASE,
BOMBARDMENT, & BULLSEYE; ALL
ARE PISTOL GRIP CONTROLLED.
COST IS $10 WITH
DOCUMENTATION. SUPLIED ON YOUR TAPE
(CASSETTE, 8 TRACK, ¼ TRACK
REEL/REEL).

Mark S. Kellen
9536 Shumway Dr.
Orangevale, Ca. 95662

MR FABRIS: ✓ 12/26/79

ENCLOSED IS A CHECK FOR $20.00, TO COVER FISCAL '79 & '80, ALSO IF YOU COULD GIVE ME A LITTLE MORE INFO ON THE PEEK, POKE, AND CALL COMMANDS.

I TRIED A PROGRAM, BUT I DON'T UNDERSTAND THE READ OUT I GET, MAYBE YOU COULD EXPLAIN IT?

```
10 LIST 15000 (OR ANY NO.)
20 GOTO 10
```

YOU LOSE CONTROL OF THE KEYBOARD AND HAVE TO GO TO THE RESET BUTTON, ALSO IF YOU USE A COMMA IT SEEMS TO RUN A WHILE,

```
10 LIST 14120, 15300
20 GOTO 10
```

HAVE A HAPPY '80

Bob Wagner

PHONE WORK 312 377-0050
      HOME 312 888-4298

On Volume 2 Nigel, you asked, "What do you want?"
My immediate wants are an assembly language
(not machine) listing of the units internal Rom
(operating system & built in programs) and an
assembly language listing of Bally's proposed
Graphic language.

Also on the Basic listing you sent
one line of Machine Code listing was lost
on each page in the Xeroxing, I would
like to get these lines: 0270, 0650, 0A30,
& 0E10, Is the $10 listing you speak of
Assembly? If so, it might give insight into the system Rom.

I believe that the 9316 Rom used by
Bally in the silicon cassette may be pin for pin
compatible with 2716 EPROM, If so, we
could pull a chip from one of their cartridges,
insert a 24 pin socket & exchange 2716
EPROM's for program transplating. However
I must have a listing of the operating system,
in order to create programs which are compatible
with it.

I would like to buy cartridges at reduced price from any members who are tossing in the hat--of games I don't already possess. However I don't want to buy another Basic Unit. Maybe even the basic cartridge + cassette interface would be nice.

The thing that bothers me about Basic is that it is an interpretive language and is extremely slow. Therefore, I see no hope for using it to create games of the real-time nature similar to the Bally games. However FORTRAN '77 would be nice if you know anyone who has converted Zilog's version over for running on the Bally.

I think the users group is a great idea and I would like to become an active contributor. I need to better understand the operating system, to apply my experience to worthwhile ends.

P.S. Would a Basic Users Manual Xerox for the Bally Unit be included with the $10. Listings?

Sincerely,

Barry W. McClave

Barry W. McClave
109-B Timberlane
Vicksburg, MS 39180

From the desk of . . . . .

MARC CARLSON

Bob,

The enclosed is self-explanatory and may or may not be useful. It maps the keypad and gives the numeric value for each character's string. It is noteworthy however that each one has 4 numeric values - spaced 256 digits apart. The keyboard mapping may be useful.

Mark Carlson
PO Box 2205
La Habra, CA
90631

Mr. & Mrs. Richard R. Grimes
1044 Lessing Street
Pittsburgh, PA 15220

ACT
√

A Question I have, Maybe
you or the Readers have
Experimented with is A
Reproduction of A Pong Game.
I would Like to Know how to
Move An object Around the Screen,
without Reprinting it. or.
To up the output time So the
Reprinting of the object can
Not Be Seen. With this Info.
Programs. can Be written Such As.
~~your a~~ An Enhanced Pong. or
A Pool-Table. where As. with Some
control. over the Speed of the Ball
will give A Life Like effect.

DEAR BOB:

JUST DROPPING A NOTE TO KEEP IN TOUCH. THE OVERVIEW OF THE "ARCADIAN"
KEYBOARD ADD-ON LOOKS PRETTY GOOD, PLEASE KEEP ME POSTED. MY MAIN INTEREST
FOR THE BALLY WOULD BE TO USE IT FROM A REMOTE LOCATION. I'M SURE THE MODEM
ATTACHMENT WOULD HANDLE THIS, BUT, WHEN WE GET THE WHOLE SYSTEM UP AND RUNNING,
I COULD USE SOME INFO ON THE WHERE-ATS AND HOW-FORS.

THE NEW "CHECKERS II" IS A CONSIDERABLE IMPROVEMENT OVER THE ORIGINAL, I
FEEL. A COUPLE OF SUGGESTIONS (FOR WHAT THEY'RE WORTH):

ADD LINE:

             1000 BOX -50,0,60,80,2
             1005 (ORIGINAL LINE 1000)

THIS WILL CLEAR OUT THE ON-SCREEN INPUT AREA AND THE MACHINE "MOVE THOUGHTS"

REPLACE LINE 1700 WITH:

             1700 INPUT""M;M=M÷10;N=RM;I=Mx10+N+1;RETURN

IF THE COORDINATE ROW/COLUMN IS ENTERED IN THAT ORDER AS A SINGLE TWO-DIGIT
NUMBER, IT ALLOWS YOU TO GROUP INPUT VALUES ON A SINGLE LINE.(IE. ROW 3,
COL 4 = 34)(THIS CAN BE EXPANDED AS LONG AS THE SINGLE "NUMBER" DOES NOT
EXCEED 32,767. ROW 7 COL 4 CROSSPOINT 6 = 746. JUST ADD ANOTHER "M=M÷10"
AFTER N=RM AND SET Q=RM)

THIS HELPS SPEED UP THE GAME A LITTLE.

ALSO PULL:

             FOR I=12 to 89; IF @(I)#0 GOSUB 2020

FROM THE END OF LINE 2010 AND MAKE IT 2013. THEN CHANGE LINE 1510 TO

             1510 GOSUB 2013; GOTO 1610

WHILE NOT SPEEDING UP THE GAME THAT MUCH, IT DOES ELIMINATE HAVING TO
WATCH THE SCREEN REBUILD EACH TIME.

HELPFUL HINT:

IF YOU GET STUCK AND WANT TO PASS, PRESS THE "HALT" KEY, THEN ENTER
"GOTO 3030" AND THE MACHINE WILL MAKE IT'S NEXT MOVE.

I WAS ALSO WONDERING IF YOU COULD DO ME A FAVOR.
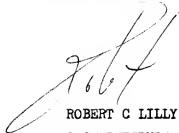
I DON'T KNOW IF YOU HAVE HEARD OF A TIMESHARE SERVICE CALLED "THE SOURCE"
OR NOT, IF NOT PLEASE SEE ENCLOSED AD COPY. I'VE BEEN ONLINE ABOUT 4 MONTHS
NOW AND I MUST SAY THAT IT'S REALLY A RATHER REMARKABLE SYSTEM, EVERYTHING FROM

UPI AND NY TIMES NEWS SERVICE ACCESS TO MAKING YOUR OWN AIRLINE RESERVATIONS
FROM HOME WITHOUT BEING PUT ON HOLD.

   THE FAVOR IS THIS: COULD YOU ASK IF ANY OTHER "ARCADIANS" ARE ALSO "SOURCE"
USERS, AND PRINT THEIR USER NUMBERS? (MINE IS TCA922)

   THE SYSTEM HAS SEVERAL "PERSONAL" MODES, TWO OF WHICH ARE "CHAT" AND "MAIL".
THE CHAT ALLOWS YOU AND ANOTHER USER TO DO JUST THAT..CHAT. WHAT YOU TYPE ON
YOUR TERMINAL SHOWS UP ON HIS AND VISE-VERSA. THE ONLY CHARGE IS YOUR HOURLY
CONNECT CHARGE REGARDLESS OF WHERE THE OTHER PARTY IS(JUST TRY CALLING WASHINGTON
D.C. TO CALIFORNIA FOR $2.75/hr). THE MAIL SYSTEM SENDS ELECTRONIC MAIL TO THE
USER'S "MAILBOX" WHICH CAN BE READ WHEN CONVENIENT. I JUST FIGURE THAT IF THERE
ARE ANY OTHER BALLY/SOURCE PEOPLE OUT THERE, MAYBE WE COULD GET TOGETHER ONLINE
AND EXCHANGE IDEAS. YOU DON'T NEED TO WORRY ABOUT PRINTING THE ACCT#'S, MOST
ARE AVAILABLE THROUGH THE "USER-DIRECTORY" (ALSO CALLED UP ON YOUR TERMINAL) AND
THIS IS HOW PEOPLE GET TOGETHER. THE "FORBIDDEN SECRET" IS THE 3 LETTER ACCESS
CODE THAT FOLLOWS THE ID. IF NOTHING ELSE, JUST PRINT MY ID AND ASK ANY USERS
TO DROP A NOTE IN MY MAILBOX.

   THANX A LOT, AND KEEP THOSE PROGRAMS AND UP-GRADES COMIN'

                                        ROBERT C LILLY
                                        3505 LEESBURG CT
                                        ALEX, VA 22302

PS: IF YOU OR ANY OF THE "ARCADIANS" EXPRESS AN INTEREST IN THE "SOURCE", I
     LIVE JUST A FEW MILES FROM TCA HEADQUARTERS IN MCLEAN, VA AND COULD
     PROBABLY PICK UP AND SEND ANY INFORMATION FASTER THAN THE WAITING LIST.
     AS GENERAL INFO, THE "SOURCE" ADDRESS IS:
                              TELECOMPUTING CENTER
                              1616 ANDERSON ROAD
                              McLEAN, VIRGINIA 22102
                              PH. 703 734-7557

Mr. Ronald Nelson   14 JAN 1980
Fidelity Electronics, Ltd
8800 NW 36 St.
Miami, FL 33178

Dear Ron,

As promised, I am enclosing a copy of the ARCADIAN to date, and will
send subsequent issues. As you read these chronologically, you will see our
growing awareness of the machine's capability. 99% of the material has been
derived by subcribers.

As a group, we were promised quite a few things (admittedly by JS&A)
and have received virtually none- people are really interested in a fully-
operating computer, and bought the Bally for theat purpose from JS&A. I am
sure they will be looking to Fidelity for assistance in upgrading the Level II
System.

I have seen the prototype Level III at Bally demonstrations and at
D.N.A., and there is tremendous capability in this system. I would like to be
able to utilize this capability and when the public sees it, they will also.

At the moment, I am working on the production of a Level II 1/2, or
mini Add-On, which is essentially an interface card between the Bally and the
S-100 family. It will have stand-alone memory capability, and arrangement for
a keyboard addition, providing about one-half of the capacity of the Level III.

If there is any way the ARCADIAN can help, please let me know. I
would also appreciate your forwarding any inquiries about consumer involvement,
people who would be interested in the ARCADIAN, etc., to me.

(1980 subscription is $10.
 1979 back issues are $10.)

                                        Yours truly

                                        Bob Fabris

GARRY HALLQUIST
625 PENN. 600
DENVER, COLO.
80203

9-20-79

ARCADIAN :

ENCLOSED ARE A LISTING AND CASSETTE
OF MY BALLY PROGRAM, "MONTHLY LOAN
PAYMENT", FOR PUBLICATION.

THE PROGRAM CALCULATES A MONTHLY PAYMENT
FROM A GIVEN PRINCIPAL AMOUNT, A GIVEN
NUMBER OF MONTHS, AND A GIVEN ANNUAL
INTEREST RATE. THE INTEREST RATE IS
COMPOUNDED MONTHLY. MONTHLY PAYMENT
IS ROUNDED TO NEAREST PENNY. PROGRAM
ALSO CALCULATES TOTAL PAYMENTS.

SAMPLE RUN
LOAN AMOUNT = 1200
INTEREST RATE = 18.000 %
NO. OF MONTHS = 12
MONTHLY PAYMENT = 110.02
TOTAL PAYMENTS = 1320.24

NOTE: LOAN AMOUNT AND INTEREST RATE
MUST BE INPUT ONE DIGIT AT A TIME,
INCLUDING LEADING ZEROES – SEE COMMENTS
ON PROGRAM LISTING.

BALLY CODING FORM

| Program | MONTHLY LOAN PAYMENT | | | Punching Instructions | | | Page | 37 |
| Programmer | G. HALLQVIST | Date 7-79 | Punch | | Card Form # | | Identification | |

PROGRAM LINE	COMMENTS
1. MONTHLY LOAN PAYMENT	
2. BY G. HALLQVIST	
3.	
4. :RETURN	
5. CLEAR; MT=1	
10 FOR K=0 TO 125; Q(K)=0;	CLEAR WORK FIELDS.
MU=31+K; NEXT K	
20 FOR K=13 TO 8 STEP -1	
30 INPUT "LOAN AMOUNT DIGI	LOAN AMOUNT UP TO $999999;
T?" L	INPUT ALL 6 DIGITS INCLUDING LEADING ZEROS
40 Q(K)=L; NEXT K	
50 INPUT "MONTHS?" M	NUMBER OF MONTHS; INTEGER AT LEAST 1.
60 FOR K=45 TO 41 STEP -1,	
70 INPUT "INTEREST RATE DI	ANNUAL INTEREST RATE UP TO 99.999%;
G IT?" I	INPUT ALL 5 DIGITS EXCLUDING DECIMAL POINT.
80 Q(K)=I; NEXT K	
90 Q(65)=1; Q(64)=2;	CONSTANT 1200
Q(80)=1; Q(26)=1	CONSTANTS 1,1
100 $÷Q(36),Q(54),Q(36)	MONTHLY INTEREST RATE i;
110 $+Q(36),Q(18)+Q(36)	1+i

BALLY CODING FORM

Program		Punching instructions		Page	1
Programmer		Graphic	Card Form #		
	Date	Punch		Identification	

PROGRAM LINE	COMMENTS
120 FOR K=1 TO M; MU=30+K	
130 $×Ø(36),Ø(72),Ø(72); NEXT K;	
140 $:+Ø(18),.Ø(72)	$(1+i)^m$
150 $:-Ø(18),.Ø(72),Ø(72)	$1 \div (1+i)^m$
160 $-Ø(36),Ø(72)	c
170 $:÷Ø(18),Ø(36),Ø(72)	$1 - (1 \div (1+i)^m$
180 $:÷Ø(18),Ø(36),Ø(72)	$(1-(1 \div (1+i)^m)) \div i$; MONTHLY AMORTIZATION FACTOR.
190 Ø(113)=5; $+Ø(90),Ø(90) 8),Ø(90)	MONTHLY PAYMENT. ROUND TO NEAREST CENT.
200 FOR K=90 TO 95; Ø(K)=Ø ; NEXT K;	MONTHLY PAYMENT TO CENTS.
210 CLEAR; PRINT "LOAN AMO UNT= "	
215 $×Ø(Ø),Ø(18),Ø(Ø)	REFORMAT LOAN AMOUNT FOR TV PRINT.
220 A=13; B=8; GOSUB 400.	GO PRINT LOAN AMOUNT.
230 $×Ø(36),Ø(54),Ø(36)	ANNUAL INTEREST RATE.
240 PRINT; PRINT "INTEREST RATE= ",	

BALLY CODING FORM

Program		Graphic		Punching Instructions		Card Form #		Page of
Programmer		Punch						73 Identification 80

PROGRAM LINE	COMMENTS
250 IF Q(45)="0" GOTO 220	
260 TV=Q(45)	
270 TV=Q(44);TV=46;TV=Q(43	PRINT INTEREST RATE.
;TV=Q(42);TV=46;TV=Q(41);TV=32;	
PRINT	
280 PRINT "NO. OF MONTHS=	PRINT MONTHS
#1,M; PRINT	
290 PRINT "MONTHLY PAYMENT	PRINT MONTHLY PAYMENT
=";	
300 A=103; B=98; GOSUB 400	GO PRINT PAYMENT DOLLARS.
310 TV=46;TV=Q(92);TV=Q(9	PRINT PAYMENT CENTS.
); PRINT	
320 K=M÷100; Q(28)=K; M=M-	REFORMAT
Kx100	
330 K=M÷10; Q(27)=K; M=M-K	MONTHS,
x10; Q(26)=M	M
340 $xQ(18),Q(90),Q(18,	TOTAL PAYMENTS
350 PRINT "TOTAL PAYMENTS=	
"	
360 A=32; B=26; GOSUB 400	GO PRINT TOTAL PAYMENTS DOLLARS.

BALLY CODING FORM

| Program | | | | | Punching Instructions | | | * Page of |
| Programmer | | | | | | Card Form # | | 73 Identification 80 |

	PROGRAM LINE	COMMENTS
370	TV=4b; TV=Q(25); TV=Q(	PRINT TOTAL PAYMENTS CENTS
	24)	
380	PRINT; STOP	
390.		END
400	Z=1; FOR K=A TO B STEP	PRINT SUBROUTINE
	-1	
410	IF Q(K)="0" IF Z GOTO	SUPPRESS LEADING ZEROS
	430	
420	Z=0; TV=Q(K)	PRINT DIGIT
430	NEXT K	
440	RETURN.	
450.		
460.		
470.		
480.		
490.		
500.		

MERRY CHRISTMAS - J FENTON
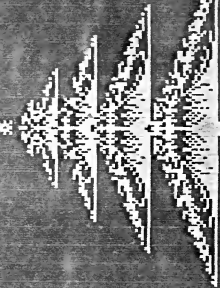
MERRY CHRISTMAS - J FENTON
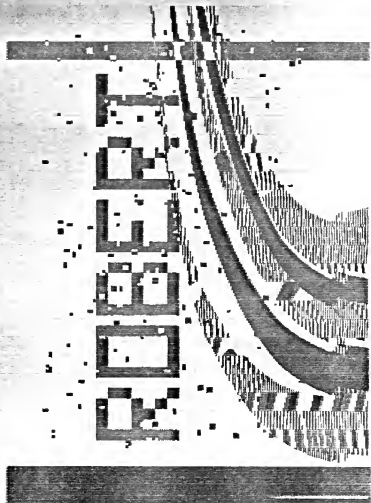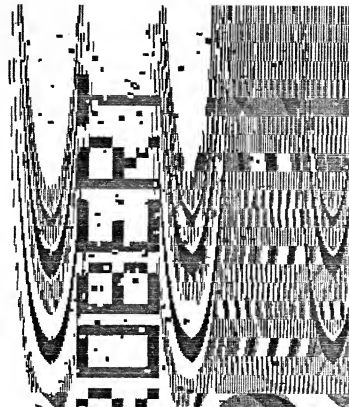
From: Robert A. Hood
8218 Tracyton Blvd.
Bremerton, Wash. 98310

To: Robert Fabris
3626 Morrie Drive
San Jose, Calif. 95127

Enclosure: (1) Prime Factors Program
(2) Division Composite Program

Discussion: Since I last wrote to you I have had a failure in my Bally
computer. Since no local repairs were available I had to send
my unit to Bally for repair. Repair cost was $44.95. In place
of repair Bally sent me a new unit. The new unit is a model
Bl 1200 Serial 7520. The 1st unit was a model BL 1200 Serial 1245.
The new unit works better than the 1st unit ever did. Screen
resolution is improved and output is centered on the screen.
The 1st unit was slightly off center to the right.

I especially enjoyed your Logo program in vol. 2 as I now have
a new use for my Bally Videocade. I have a video tape recorder
and recently obtained a color TV camera. So I am now using the
Bally computer to provide introduction titles, scroll credits and
other special effects. Also Logos and other special effects
programs can be stored on the Bally Cassete tape and reused when
desired. In all the Bally is working very well for this purpose.

Enclosure (1) is a program which will print all the prime factors
for any number less than 32768. The program works as follows:
         10 - 50   print heading & purpose of program
         60 - 110 store list of needed primes
               120 request input
               130 print output label
        140 - 170 compute & print prime factors
               180 return for next input
I would recommend the following procedure when you make your first
run of this program. When the computer requests "input number ?"
hit **HALT**. Then type the following statement (no statement number):
FOR X = 1 TO 37;PRINT @(X);NEXT X This causes all the values of
@(X) to be printed on the screen. Carefully check these values
against the values listed in the program (enclosure(1)). This is
the easiest & fastest way to check for typing errors. In writing
the program I found that an error in this data which caused problems
in obtaining correct output, which I at first thought might be in
the logic of statement 150. It appears that this procedure would be
valuable when typing any program that has a long data array as the
computer does not find or correct data errors.

Enclosure (2) is a combination of the decimal division program by
L. Gallant in the Arcadian Vol 2 pg 3 & the mixed number division
by M. Gladstein in the Arcadian Vol 1 pg 80 with addition of my
prime factor program to reduce fractions. Putting these 3 programs
together produces a very nice division program as both decimal and
mixed number results are output.

Discussion: I have found that a remotely controlled power plug is a very
useful addition to the cassette recorder when saving programs.
Use of this simple & cheap device gives better control of the
cassette recorder. I am able to set the recorder to the desired
starting point and its controls in the record position with the
remote plug switch off. Then I type :PRINT;LIST on the Bally
press the remote plug switch to start the recorder and then press
GO on the Bally. It can also be used when listing or inputing a
program from tape. Set cassette player to desired starting position
and press play. Then type :INPUT or :LIST press GO and press
remote plug switch to start recorder.

I also wish to make comments on MICROTREK (pg 89 & vol 2 pg 4)
and BATTLESTAR GALACTICA (vol 2 pg 4 & Kilobaud 11/79 pg 142).
These are 2 nice games but had some running problems.

(1) MICROTREK: Corrections as given for lines 200 & 220 do not
work. "IF C Ø C=-C" causes a WHAT? error return requesting an
operator between C & Ø. Also on my unit "IF A GOTO 110" means
if A not equal to Ø go to 110 and not if A greater than Ø go to
110 as stated in Arcadian pg 41. Placing various operators
(#,<,>) in lines 200 & 220 allows program to run but did not
correctly refuel ship while docked at Starbase. This can be
corrected by making the following changes:
     200 CLEAR;Q=Ø (clears screen & initializes Q)
     Delete lines 210, 220 & 240 (not needed)
     Add to line 610 ;M=I;N=J (sets row & col Starbase to M & N)
     612 IF M=E+1 IF(F=N-1)+(F=N+1) Q=1
     614 IF F=N IF(E+2=M)+(E+2=M) Q=1 (if next to Starbase set Q)
     Line 620 & 690 replace with GOTO 280 with GOTO 270 for refueling.
     Add to line 100 ;M=Ø;N=Ø (remove Starbase if new quadrant)
Program now works correctly. However I also added this:
     665 PRINT"STARBASE: ",#15,M,",",#1,N   This line adds Starbase
location in grid to Status output.

(2) BATTLESTAR GALACTICA: This program needs the following changes
in addition to those given in the Arcadian.
     Line 140 change BOX height from 6 to 7 to omit unwanted trace
of Cylon ship when it is lowered by Joystick.
     Line 220 change - signs to + signs to make Cylon ship move in
same direction as the Joystick control.
     540 IF R>Ø CLEAR;PRINT;PRINT"   CONGRATULATIONS!";GOTO 550
     545 CLEAR;PRINT;PRINT" YOU HAVE BEEN DEFEATED!!";GOTO 570
     Last 2 statements correct for case when R<1.
     Reverse hit sequence & target laser firing display.
     300 FOR W=80 TO 62 STEP -3
     310 BOX X+7,Y,83-W,83-W,3;MU=W
     320 BOX X-7,Y,83-W,83-W,3;MU=W-1
     325 NEXT W;BOX X,Y,35,21,2;R R 2
     460 FOR Z=1 TO 6;BOX X,Y+1,33,10,3
     470 FOR W=55 TO 65;MU=W
     480 NEXT W
     490 NEXT Z
Program now runs very nicely. Program will run without reverse
of hit sequence & target laser firing but does not look as good.
I also changed line 520 to read as follows;
     520 PRINT" YOU HAVE BEEN HIT!";PRINT" ATTACK TERMINATED!!";
         FOR Q=1 TO 500;NEXT Q;RETURN

Robert Kool

```
   1 .
   2 .
   3 :RETURN
   5 .R. HOOD
   6 .DEC 9 1979
  10 CLEAR;PRINT"     ** PRIME FACTORS **
  20 PRINT;PRINT"THIS PROGRAM DETERMINES
  30 PRINT"AND PRINTS ALL OF THE
  40 PRINT"PRIME FACTORS FOR NUMBERS
  50 PRINT"LESS THAN 32768
  70 @(1)=2;@(2)=3;@(3)=5;@(4)=7;@(5)=11;@(6)=13;
     @(7)=17;@(8)=19;@(9)=23;@(10)=29
  80 @(11)=31;@(12)=37;@(13)=41;@(14)=43;@(15)=47;
     @(16)=53;@(17)=59;@(18)=61
  90 @(19)=67;@(20)=71;@(21)=73;@(22)=79;@(23)=83
 100 @(24)=87;@(25)=89;@(26)=97;@(27)=101;@(28)=103
 110 @(29)=107;@(30)=109;@(31)=113;@(32)=127;@(33)=131
 120 @(34)=137;@(35)=139;@(36)=149;@(37)=151
 125 PRINT;INPUT"INPUT NUMBER ?"N
 130 PRINT;PRINT"PRIME FACTORS ARE :
 140 FOR X 1 TO 37
 150 A=N÷@(X);IF RM=Ø N A;PRINT #4,@(X),;GOTO 150
 160 NEXT X
 170 IF N>1 PRINT #4,N
 180 PRINT ;GOTO 120
```

Enclosure (1)

```
 1 .
 2 .
 5 :RETURN
 8 CLEAR
10 PRINT"DIVISION PROGRAMS
15 PRINT;PRINT"     QUOTIENT TYPES
20 PRINT"(1) INTEGER & DECIMAL
30 PRINT"(2) INTEGER & FRACTION
80 PRINT
90 PRINT;PRINT"INPUT DIVIDEND, DIVISOR
100 PRINT"& N). DECIMAL PLACES
110 INPUT X,Y,Z
115 PRINT
120 Q=X÷Y
130 PRINT #1,Q,".",
140 FOR B=1 TO Z
150 E=(RMx10)÷Y
160 PRINT #1,E,
170 NEXT B
180 PRINT
230 Q=X÷Y;R=RM
240 @(1)=2;@(2)=3;@(3)=5;@(4)=7;@(5)=11;@(6)=13;
    @(7)=17;@(8)=19;@(9)=23;@(10)=29
250 @(11)=31;@(12)=37;@(13)=41;@(14)=43;@(15)=47;
    @(16)=53;@(17)=59;@(18)=61
300 FOR K=1 TO 18
310 J=R÷@(K);IF RM=Ø GOTO 330
320 NEXT K
325 GOTO 345
330 L=Y÷@(K);IF RM=Ø R=J;Y=L;GOTO 310
345 IF Q=Ø GOTO 360
350 PRINT #1,Q,
360 IF R=Ø GOTO 90
370 PRINT #1," ",R,"/",Y
380 GOTO 90
```

Enclosure (2)

SIG GRAPH 79

1-2-80 (yea, for the new DECADE!!!)

Dear Robert Fabris, telefriend:

The enclosed graphics have been realized first on the ARCADE, sent line-level (composite video) over to the Sandin IMAGE PROCESSOR an ana- log computer optimized for the processing of video signals, displayed on TV monitor, fed into an AXIOM EX-850 videoprinter; this videoprinter is a NEW "toy" just out - ~~it takes any B/W video picture/dis~~
                        it takes any TV picture and turns it into a "silver-gray paper" picture. The videoprinter accepts a 75Ω composite video signal as its input (BNC); thus any graphic computed on a TV set can be "videoprinted" onto paper if ~~you have a~~
                                              your TV set (or Arcade) will output a 75Ω composite video signal.

We (Jane Veeder and Phil Morton) are going to be in ALASKA this summer; could you send out a "call" via ARCADIAN for any contact there? We'll be mobiling in a Chevy-van with 3/4" videotapes which have much "applied Arcadian" graphics into the a/v synthesis channels...
                                & and SONICS   ...if any Alaskians would like contact they should write us;
                                                                    & or phone

    Phil Morton
    Jane Veeder
    1839 S. Halsted St.
    Chicago, Il. 60608
    (312) 666-5628

My purpose in sending you these graphics is to encourage the increased visualization of computed periodics; I hope you (and your printing-service) can find a way to re-produce this "species" of graphic imagery... If you can I will send you more - constantly; along with useful (hopefully) imbed- ed programs for other Arcadians.

The "ARCADIAN HOT SHOT" graphic was motivated by the desire to give my first 12 students a 'certificate' of sorts for completing the DIGITAL VIDEO course at the School of the Art Institute of Chicago, Fall Sem. 1979. This was a new course into digital video; I chose the Arcade to be the vehicle for students to 'break' their art-assumptions on when facing the need to learn computer ~~graphic~~ programming in an art college. It's worked-out well;
                                                                 very well.

```
--------------------------------------------------------------------------------
Phil Morton and Jane Veeder          "I DON'T KNOW HOW THEY WOULD RATE IT

contelligently communicate the        CONSCIOUSLY BUT - I KNOW DAMN WELL

ELECTRONIC VISUALIZATION CENTER        FOR HALF-AN-HOUR THEY WERE GLUED TO

television research satellite or-      THE TV DEALING WITH IT..........AND

biting Art Institute Corporation       I'VE NEVER SEEN THEM DO THAT BEFORE,

Chicago 1976-84.                       EVER!" - Agent Cross (CIA); SUBURBIA

--------------------------------------------------------------------------------

        "I'm hoping that someday someone will come up with the
        formula that will allow us an hour of network news."
                - Les Crystal, NBC News Chief, Jan. 1979; TV GUIDE

-------------------------                    ----------------------------

        We got it, Les.  We have the formula!  Make your own, Les.

--------------------------------------------------------------------------------

PROGRAM # 7 was played back twice in a 60 minute time-slot on Channel 11,

WTTW (PBS) Chicago - January 25, 1979.  At the end of this television

transmission people were invited to tune-over to an FM radio station and

phone in for a live discussion.  Many did.  30 minutes after the radio

transmission ended people were still phoning in, jamming the lines...

--------------------------------------------------------------------------------

PROGRAM # 7 primary technical resources: a Sandin Image Processor and Eµ
Audio Synthesizer (analog computers), Bally Arcade Home (digital) Computer,
Panasonic 3/4" Videotape Editing System, Chevy Van and a GMC Motorhome.

--------------------------------------------------------------------------------

                            HOME COMPUTER
                            VIDEO SYSTEMS

--------------------------------------------------------------------------------

        We are using light weight audio/video technologies with
        analog/digital computers to research and present a model
        personal participation in the television image life of
        our culture.

--------------------------------------------------------------------------------

PROGRAM # 7 is one in a series (30 minute videotapes) of subject dependent

research reports from our electronic-and-geographic field developments;

an issue of 30 minutes from our ongoing electronic adventure.  We look

forward to yours.

--------------------------------------------------------------------------------

        GOOD LUCK IN ELECTRONICALLY VISUALIZING YOUR FUTURES!

--------------------------------------------------------------------------------
```

Jane Veeder and Phil Morton

contelligently communicate the

ELECTRONIC VISUALIZATION CENTER

television research satellite

orbiting Art Institute Corporation

Chicago 1976-84 (312/666 5628).

"Phil and Jane of Chicago took some nice video tapes at Dayton of the various ATV demos and displays/fleas. They were nice enough to send a special copy which has some extra added video effects added and has been well edited for presentation. It will be available for showing at the various conventions A5 attends if a local OP will supply a U-Matic (Sony 1600 or similar) 3/4" tape machine and monitor. They are video hobbyists and not into ham video and have exhibited some real creative talent including a video computer controlling the effects used in making the tape." - Henry Ruh KB9EO A5 Magazine

We went to the 1979 Dayton Hamvention to research the perceptual environment of

FCC licensed Amateur Television (ATV). We think ATVers are what Gene Youngblood

calls an "alternative reality-community"; ATVers are a special interest group

whose use of television technologies constructs a reality that is an alternative

to that of our four American broadcasting networks. PROGRAM #9 is a simulation

which expands upon our experience at Dayton as NEWS reporters immersed in the

signal-live environment shared by the ATV reality-community.

PROGRAM #9 primary technical resources: a Sandin Image
Processor (analog computer), Bally Arcade Home (digital)
Computer, Panasonic 3/4" Videotape Editing System, Chevy Van

--------------------------   HOME COMPUTER --------------------------------
                           VIDEO SYSTEMS

PROGRAM #9 is offered in two directions: One, it is a perceptual research report

giving those unfamiliar with ATV our sense of how the 'amateurs' communicate

with LIVE television; Two, it gives ATVers, who were so generous with their

images, a view of our "shack" and our perceptual processing of their signals

interjected with images of our future-fantasies of creature communications.

        "WE ARE EXPANDING THE HORIZONS OF AMATEUR TELEVISION!" - *E.R.*

    We are using light weight audio/video technologies with analog/digital
    computers to research and present a model of personal participation
    in the television image life of our culture.

        "One (slow scan) station I know does a regular weather
        report complete with pictures he receives direct from
        the (weather) satellite."
                              - *Dave Smith, Robot Research*

PROGRAM #9 (Amateur TV) is one in a series of subject dependent research
reports from our electronic-and-geographic field developments.

FOR FURTHER INFO ABOUT ATV, we recommend: A5/Amateur Television Magazine,
Henry Ruh, Editor; 7391 West State Hwy 46, Ellettsville, IN 47429.

        GOOD LUCK ELECTRONICALLY VISUALIZING YOUR FUTURES!

Machine Language Puzzler

JANE/PHIL

>180

169 .TERMINATING
        INHIBITS CU
170 A=A
180 GOTO 170
200 .INDEFINITE
        PIXELATING
230 BOX RND (160
(88)-44,RND (2),R
240 GOTO 230

```
169 .TERMINATING LOOP;
       INHIBITS CURSOR
170 A=A
180 GOTO 170
200 .INDEFINITE RND (2)
       PIXELATING FIELD
230 BOX RND (160)-80,RND
(88)-44,RND (2),RND (2),3
240 GOTO 230
```

```
100 IF
×L-79,(
120 NE
130 NE
139 .2
    E
140 FO
150 BO
160 NE
```

```
ERMINATING LOOP;
NHIBITS CURSOR
A
TO 170
NDEFINITE RND (2)
IXELATING FIELD
X RND (160)-80,RND
,RND (2),RND (2),3
TO 230
```

```
100 IF PX(X,Y) BOX (X+81)
xL-79,(Y-V)xL,L,L,1
120 NEXT Y
130 NEXT X
139 .2 TEXT LINE
    ERASE LOOP
140 FOR A=QTO 44
150 BOX 0,A,160,1,2
160 NEXT A
```

```
19
20
30
40
50
60
70
80
90
95
```

```
PX(X,Y) BOX (X+81)
-V)×L,L,L,1
RT Y
T X
TEXT LINE
RASE LOOP
A=QTO 44
0,A,160,1,2
T A
```

```
19 INPUT L
20 CLEAR ;BC=0;FC=7
30 PRINT 'ARCADIAN'
40 PRINT 'HOT SHOT'
50 Q=29
60 IF L>4 Q=37
70 V=37
80 IF L>4 V=40
90 FOR X=-80TO 160÷L-80
95 FOR Y=QTO 43
```

```
1
2
3
4
7
8
9
15
```

```
T L
R ;BC=0;FC=7
T 'ARCADIAN'
T 'HOT SHOT'

>4 Q=37

>4 V=40
X=-80TO 160÷L-80
Y=QTO 43
```

```
1 :   ELECTRONIC
2 :   VISUALIZATION
3 :   CENTER
4 :
7 :DAN SANDIN
8 :PHIL MORTON
9 :
15 :2 TEXT LINES
     SCALED-BIGGER
     VIA "L" VARIABLE...
```

```
 1 :    ELECTRONIC
 2 :    VISUALIZATION
 3 :    CENTER
 4 :
 7 :DAN SANDIN
 8 :PHIL MORTON
 9 :
15 :2 TEXT LINES
   SCALED-BIGGER
   VIA "L" VARIABLE....
```
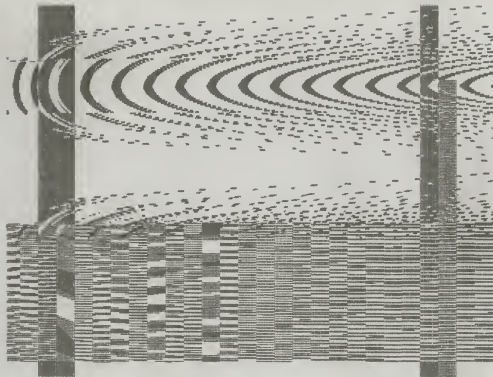
"...A MOBILE HOME
COMPUTER TELEVISION
TRANSMISSION TERMINAL."

ELECTRONIC
VISUALIZATION
CENTER
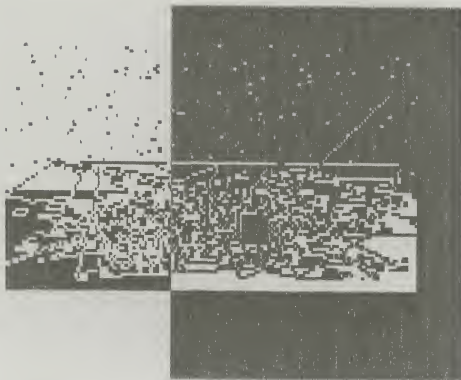
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>HALT
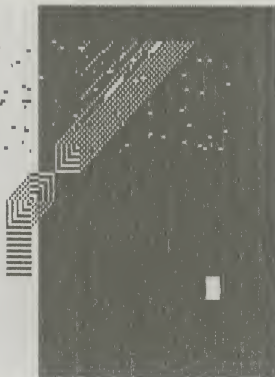
BORED

U CAN & MUST
understand
COMPUTERS ...
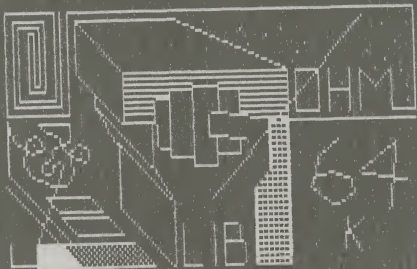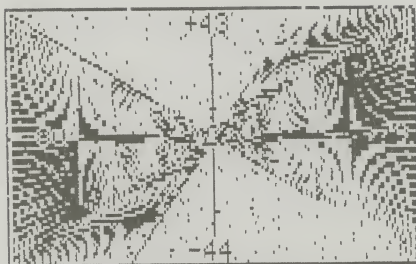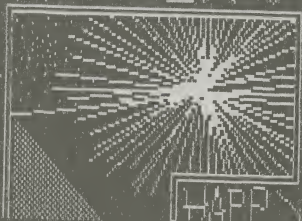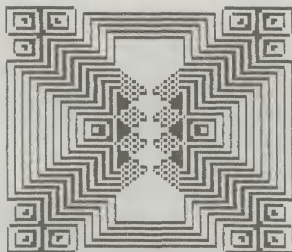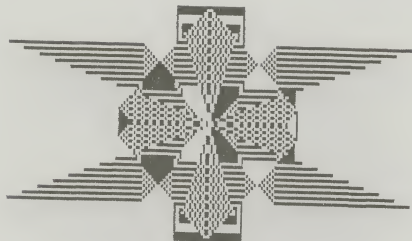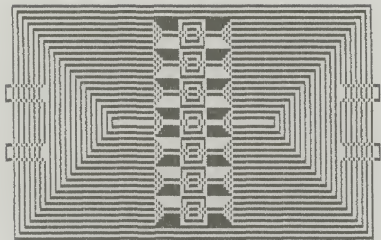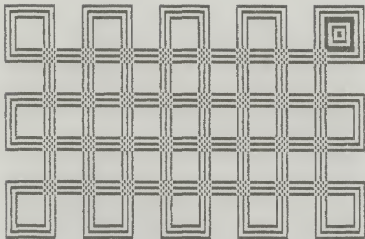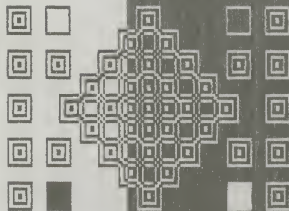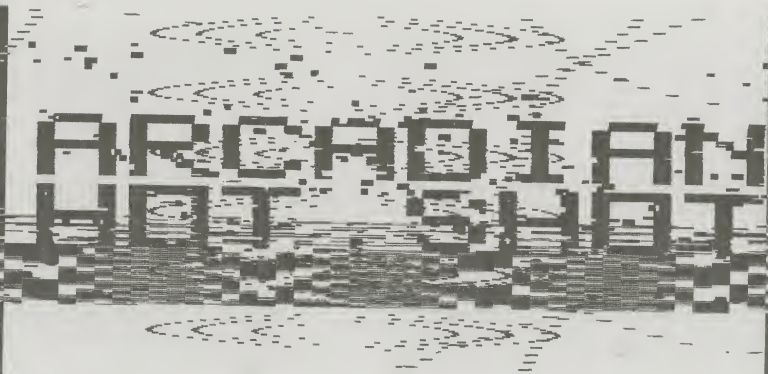
DIGITAL VIDEO

ARCADIAN HOT SHOT

MERRY CHRISTMAS - J FENTON

ALASKA CALL

ALASKA CALL

ARCADIAN HOT SHOT
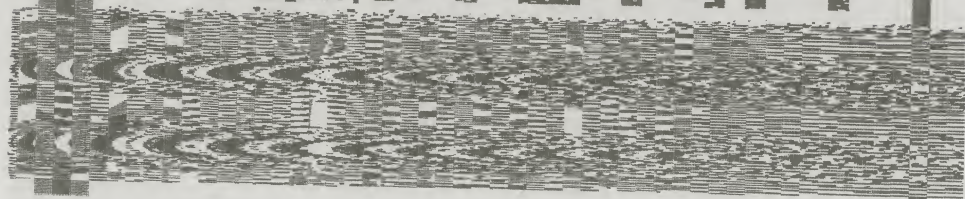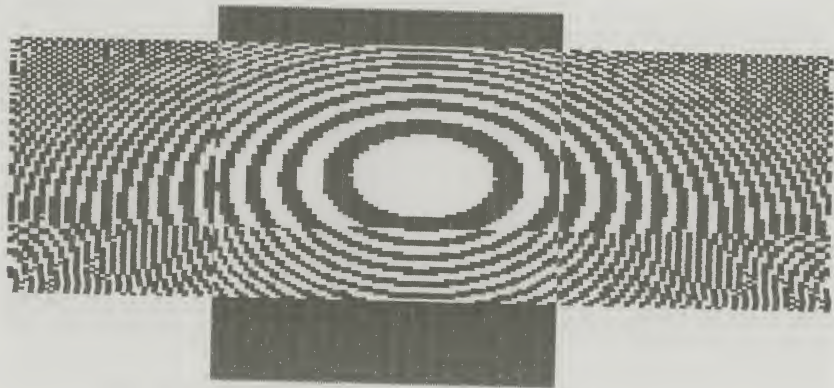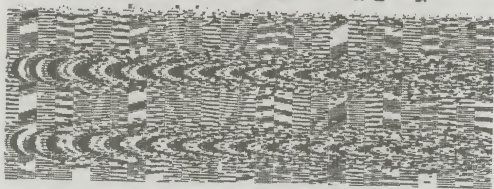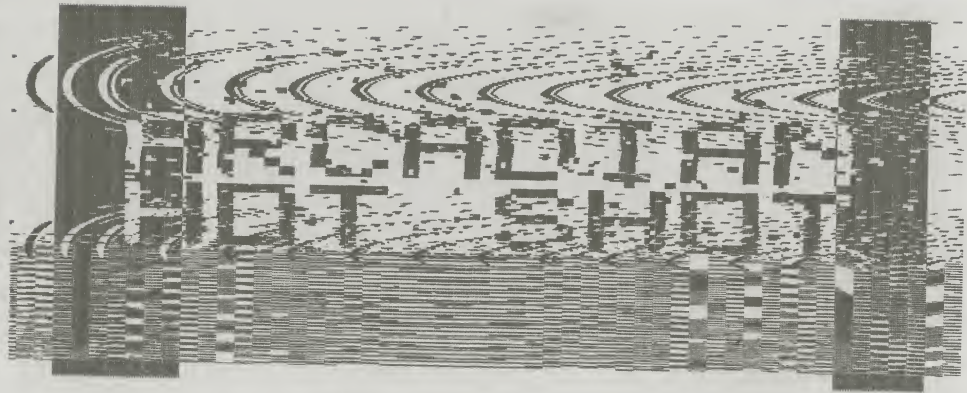
Auto sound: your living room on the road

Consumers are demanding hi-fi quality sound in their cars? Can the industry produce it?

By Harry Maynard

Despite the current decline of new-car sales, an uncertain gas situation, a downsurge in driving, and an excess of product availability, the leading car-stereo manufacturers are looking for a growth market in the Eighties. Manufacturers now think that car stereo sales will top out 1979 at around $1 billion at retail—a figure it took the home stereo business 30 years to reach.

"Without any disasters, I'd expect that the industry should reach sales of between $1.5 to $2 billion by 1985. In 1980, our total industry sales will be up about 15 percent in dollars, unless we get gas rationing, or OPEC should cut off oil supplies. Part of this future growth will of course be inflation and higher prices. For the last four years there has been a steady yearly increase in how much consumers invested in car stereo. We think the consumer is reaching for the same kind of sound he has come to enjoy in the home. This is the positive side of the future," says Lauren Davies, senior vice president of Craig Corp.

"We expect the consumer to drive his car longer," adds Davies, "but we keep getting reports from our dealers that there is a lot of upgrading going on among people who already own the 150-million moving vehicles out there. We find the newer car-stereo buyer still thinks of better sound in the car as part of his lifestyle. For example, a growing percentage of car-stereo installations are four-speaker installations, and it's not uncommon for the car-stereo buyer to spend up to $200 for speakers today.

Attractive car stereo displays can greatly increase sales

"At the retail level, the stronger dealer will get stronger, and the weaker dealer weaker. People will spend more for installation than they have in the past, because once they have decided on a good system, they want to optimize its sound. Our major market base is still the 18-24-year olds, but the base is getting older, moving up to 18-34-year olds, and is becoming more affluent and upward-bound. This new buyer still wants the latest technology in car stereo: Dolby, more power, increased miniaturization, and better speakers, because he has become more aware of what these developments offer him in improved sound," he concluded.

Broader demographics

Jensen's Jim Twerdahl, vice president of marketing for car stereo, thinks the market will continue to grow by perhaps 20 percent in 1980, "which will mean seven percent real growth. As an industry, I don't think we've done enough to appeal to other demographic groups beyond the traditional 18-24. Our marketing task will be to increase awareness among older and more affluent groups, and women. We've just got to broaden awareness of the achievements made in car stereo in the last few years. We have got to communicate better.

"Our business is split 50-50 between the new-car buyer, and the aftermarket. Even if people buy fewer cars, we think the car-stereo dealer who promotes aggressively, offers real value, and does more than run laundry-list ads will more than hold his own," says Twerdahl.

The fascination of 'electronic toys'

America's 'primal urges' for video games and computer technology should boost sales this year

By N. I. Weinstock

The public that bought Monopoly and the space program is buying all the little (and not so little) toys that appeal to America's love for games and technology as fast as they can be shipped. This holiday season, computer games, video games, and small hand-helds are selling as never before. Can they keep it up?

Any gift item should show a letdown in the first quarter, of course. But all the dealers we talked to expect seasonally adjusted sales of these games to do nothing but go up. A big factor is the advertising and promotion expected from manufacturers. Mattel, Atari, Bally, Magnavox, and others all have plans for accelerating visibility. Both price points and consumer interest are making retailers very confident.

"It's the only stuff that people want to look at," said the games department manager at Gimbels in New York. For the Christmas season, a thousand square feet of Gimbels main store was turned over to computer games, and sources there tell us that much of the display and stock will be kept up throughout the year.

At the more sophisticated extreme of the home-computer phenomenon, Omega, formerly a hi-fi store in Bellevue, Washington, has gone completely over to computers. President Dick Lawrence says, "We felt the future was limited in the stereo business. We made the move gradually over the last year, and now we know it was definitely the right move to make . . . There's really a role for the specialty store in this business." He said that he expects profits to increase by 15 to 20 percent in 1980.
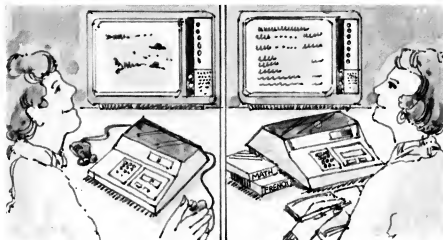
Apple Computer is expecting to double or triple business next year; although the firm did not quite make their $100 million goal in '79, they did "pretty spectacular" according to Product Marketing Manager Phil Roybal. Their accomplishments in '79? Bringing their retailer count to over 600; the creation of about 400 local service centers; and lastly, the introduction of a strong "business software line."

Mattel had an extremely strong advertising and promotion plan worked up for Intellivision and its hand-helds in '79, but had problems in production. Now that the big toymaker is beginning to ship its electronics in large quantities, the reinforcement campaign will get into full swing. Included are tie-ins to professional sports and a great amount of network advertising.

Expanding the universe

"The nature of the product and the size of the market are determined by software," says Dick Lawrence. And Jeff Rochlis, president of Mattel Electronics, says, "The sooner we create a large universe of owners, the more software we can sell."

The first step toward expanding the universe was of course last summer's licensing arrangement with Sylvania, (which manufactures Mattel's product), to market Intellivision itself. "Two can do a better job than one," said Rochlis at the time.

"The way we see it, there should be plenty of market for the four to five major manufacturers," says Jack Nieman, national sales manager for Bally. "We look for an additional eight to 10 percent of the market and ourselves. We're looking for 600,000 to 700,000 units in 1980." He adds: "Mattel will certainly introduce Intellivision for 1980, and that will help us, too. A lot of buyers purchased it this year, and their money's been held up. Now that it's coming out, that's starting to release a little of that money. It hurt us this year; it will help us next year."

Nieman says that Bally has distribution over only 50 percent of the country now. "We'll expand sometime after January," he says. "We

```
   1.ZAPPIT
   2.BY ROGER SWEARINGEN
   4:RETURN
   5CLEAR:NT=Ø:C=Ø:GOTO 480
  10CLEAR:BC=Ø:FC=180:NT=Ø:
     D=255:PRINT"SCORE ":PRINT
     #1,C,:X=RND(1ØØ)-5Ø:Y=RND
     (5Ø)-25
  20GOSUB 37Ø
  30LINE-44,-44,4:LINE43,43,1:
     LINE-44,43,4:LINE43,-44,1
  40BOXØ,Ø,16Ø,1,1:BOXØ,Ø,1,88
     ,1
  50LINEØ,2Ø,4:LINE1Ø,26,1:
     LINE2Ø,2Ø,1:LINE26,1Ø,1:
     LINE2Ø,Ø,1
  60LINE26,-1Ø,1:LINE2Ø,-2Ø,1:
     LINE1Ø,-26,1:LINEØ,-2Ø,1
  70LINE-1Ø,-26,1:LINE-2Ø,-2Ø,
     1:LINE-26,-1Ø,1:LINE-2Ø,Ø,
     1
  80LINE-26,1Ø,1:LINE-2Ø,2Ø,1:
     LINE-1Ø,26,1:LINEØ,2Ø,1
  90LINEØ,Ø,4:Z=1
 100GOSUB 33Ø
 110&(21)=2*45:BOX X,Y,32,6,Z:
     BOX X,Y,3Ø,2,Z
 120BOX X,Y-3,24,1,Z:BOX X,Y+4,
     16,1,Z:BOX X,Y+5,8,1,Z
 130BOX X+21,Y-1,5,4,Z:BOX X-22
```

```
     ,Y-1,5,4,Z;BOX X+25,Y-2,3,3
     ,Z;BOX X-26,Y-2,3;3,Z
140LINEX+19,Y+1,4;LINEX+30,Y-4
    ,Z;LINEX+24,Y-4,Z;LINEX-26,
    Y-4,4;LINEX-21,Y+1,Z
150BOX X,Y-4,26,1,Z;BOX X+8,Y-
    4,7,2,Z;BOX X-8,Y-4,7,2,Z
160LINEX-8,Y+1,4;LINEX-6,Y-1,2
    ;LINEX-6,Y-2,2;LINEX-8,Y-4,
    2;LINEX-10,Y-2,2;LINEX-10,Y
    -1,2;LINEX-8,Y+1,2;LINEX+8,
    Y-1,4
170LINEX+6,Y-1,2;LINEX+6,Y-2,2
    ;LINEX+8,Y-4,2;LINEX+10,Y-2
    ,2;LINEX+10,Y-1,2;LINEX+8,Y
    +1,2
180LINE0,0,4;IF Z#2 IF TR(1)=1
    GOTO 210
190IF Z=2 GOTO 20
200IF Z=1 Z=2;&(21)=85;GOTO 11
    0
210FC=98;NT=5;&(21)=0
220LINE0,0,4;LINE-24,-44,-1;
    LINE24,-44,-4;LINE0,0,1
230FOR Q=0TO3;MU="$";MU="?";
    NEXT Q
240IF 10>X IF-10<X GOTO 260
250GOTO 10
260IF 10>Y IF-10<Y GOTO 280
270GOTO 10
```

```
280C=C+1; Q=RND(15); R=RND(15);
    FOR A=1TO8; Q=QxA÷2; R=RxA÷2
290&(19)=150; BC=0; &(23)=255; D=
    D-3; BC=92; &(21)=D
300BOX Q,R,RND(5),RND(5),1; BOX
    Q,-R,RND(5),RND(5),1
310BC=7; BOX-Q,R,RND(5),RND(5),
    1; BC=92; BOX-Q,R,RND(5),RND(
    5),1
320NEXT A; &(19)=0; &(21)=0; &(23
    )=0; GOTO 10
330IF 10>X IF -10<X GOTO 350
340CY=-35; CX=-20; PRINT"TRACKIN
    G"; RETURN
350IF 10>Y IF -10<Y CY=-35; CX=
    -20; PRINT" LOCKED "; RETURN
360GOTO 340
370IF JY(1)=0 IF JX(1)=0 GOTO
    420
380IF JX(1)=1 X=X-25
390IF JX(1)=-1 X=X+25
400IF JY(1)=1 Y=Y-25
410IF JY(1)=-1 Y=Y+25
420X=X+RND(20)-10; Y=Y+RND(20)-
    10
430IF 10>X IF -10<X GOTO 450
440RETURN
450IF 10>Y IF -10<Y GOTO 470
460RETURN
470X=0; Y=0; RETURN
```

```
480 PRINT"DO YOU WANT INSTRUCTI
   ONS ?";:PRINT" 1=YES 0=NO
490 IF &(23)=8 GOTO 520
500 IF &(22)=16 GOTO 10
510 GOTO 490
520 PRINT"THIS GAME DOES NOT KE
   EP    TIME. THE JOYSTICK STE
   ERS THE TARGET. THE TRIGGER
      FIRES THE LASER.
530 PRINT"NO HIT IS SCORED     U
   NLESS THE SCREEN READS  "L
   OCKED".
540 FOR A=0TO1500:NEXT A
550 GOTO 10
```

```
   1 .
   2 .ZAPPIT
   3 .BY R.SWEARINGEN
   4 : RETURN
   5 CLEAR ;NT=0;C=0;GOTO 480
  10 CLEAR ;BC=0;FC=100;NT=0;D=255;PRINT "SCORE ";PRINT #1,C,;X=RND (100)-50;Y=R
ND (50)-25
  20 GOSUB 370
  30 LINE -44,-44,4;LINE 43,43,1;LINE -44,43,4;LINE 43,-44,1 -
  40 BOX 0,0,160,1,1;BOX 0,0,1,88,1
  50 LINE 0,28,4;LINE 10,26,1;LINE 20,20,1;LINE 26,10,1;LINE 28,0,1
  60 LINE 26,-10,1;LINE 20,-20,1;LINE 10,-26,1;LINE 0,-28,1
  70 LINE -10,-26,1;LINE -20,-20,1;LINE -26,-10,1;LINE -28,0,1
  80 LINE -26,10,1;LINE -20,20,1;LINE -10,26,1;LINE 0,28,1
  90 LINE 0,0,4;Z=1
 100 GOSUB 330
 110 &(21)=2b45;BOX X,Y,32,6,Z;BOX X,Y,38,2,Z
 120 BOX X,Y+8,24,1,Z;BOX X,Y+4,16,1,Z;BOX X,Y+5,8,1,Z
 130 BOX X+21,Y-1,5,4,Z;BOX X-22,Y-1,5,4,Z;BOX X+25,Y-2,3,3,Z;BOX X-26,Y-2,3,3,Z
 140 LINE X+19,Y+1,4;LINE X+30,Y-4,Z;LINE X+24,Y-4,Z;LINE X-26,Y-4,Z;LINE X-21,Y
+1,Z
 150 BOX X,Y-4,26,1,Z;BOX X+8,Y-4,7,2,Z;BOX X-8,Y-4,7,2,Z;
 160 LINE X-8,Y+1,4;LINE X-6,Y-1,2;LINE X-6,Y-2,2;LINE X-8,Y-4,2;LINE X-10,Y-2,2
;LINE X-10,Y-1,2;LINE X-8,Y+1,2;LINE X+8,Y+1,4
 170 LINE X+6,Y-1,2;LINE X+6,Y-2,2;LINE X+8,Y-4,2;LINE X+10,Y-2,2;LINE X+10,Y-1,
2;LINE X+8,Y+1,2
 180 LINE 0,0,4;IF Z#2IF TR(1)=1GOTO 210
 190 IF Z=2GOTO 20
 200 IF Z=1 Z=2;&(21)=85;GOTO 110
 210 FC=98;NT=5;&(21)=0
 220 LINE 0,0,4;LINE -24,-44,-1;LINE 24,-44,-4;LINE 0,0,1
 230 FOR Q=0TO 3;MU="$";MU="?";NEXT Q
 240 IF 10>XIF -10<XGOTO 260
 250 GOTO 10
 260 IF 10>YIF -10<YGOTO 280
 270 GOTO 10
 280 C=C+1;Q=RND (15);R=RND (15);FOR A=1TO 8;Q=QbAc2;R=RbAc2
 290 &(19)=150;BC=0;&(23)=255;D=D-3;BC=92;&(21)=D
 300 BOX Q,R,RND (5),RND (5),1;BOX Q,-R,RND (5),RND (5),1
 310 BC=7;BOX -Q,R,RND (5),RND (5),1;BC=92;BOX -Q,-R,RND (5),RND (5),1
 320 NEXT A;&(19)=0;&(21)=0;&(23)=0;GOTO 10
 330 IF 10>XIF -10<XGOTO 350
 340 CY=-35;CX=-20;PRINT "TRACKING";RETURN
 350 IF 10>YIF -10<Y CY=-35;CX=-20;PRINT "LOCKED";RETURN
 360 GOTO 340
 370 IF JY(1)=0IF JX(1)=0GOTO 420
 380 IF JX(1)=1 X=X-25
 390 IF JX(1)=-1 X=X+25
 400 IF JY(1)=1 Y=Y-25
 410 IF JY(1)=-1 Y=Y+25
 420 X=X+RND (20)-10;Y=Y+RND (20)-10
 430 IF 10>X IF -10<XGOTO 450
 440 RETURN
 450 IF 10>YIF -10<YGOTO 470
 460 RETURN
 470 X=0;Y=0;RETURN
 480 PRINT "DO YOU WANT INSTRUCTIONS? PRINT X (1=YES 0=NO)
```

(handwritten annotations)

7 (near line 10)

Line X-32,Y-4,23 (near line 140)

;If Z=2 Goto 180 (near line 150)

my printer substitutes
b for x (multiply)
and
c for ÷ (divide)

(near line 350) *DO / SPR* annotations

Roger —
Please proofread.

At the moment, when
TRACKING is cleared,
the G remains. Should
"LOCKED" be
"LOCKED" ??

SCHEDULED TO
PRINT in
ISSUE #3

This has been reviewed by one of my 'elves'

```
490 IF &(23)=8GOTO 520
500 IF &(22)=16GOTO 10
510 GOTO 490
520 PRINT "THIS GAME DOES NOT KEEP TIME.  THE JOYSTICK STEERS THE TARGET,  THE
TRIGGER FIRES THE LASER.
530 PRINT "NO HIT IS SCORED UNLESS THE SCREEN READS "LOCKED".
540 FOR A=0TO 1500;NEXT A; Goto 10
550 GOTO 10
>
```